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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,493	12/17/2001	Glenn M. Tom	472	6536

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ATMI, INC.  
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EXAMINER

PAULRAJ, CHRISTOPHER

ART UNIT PAPER NUMBER

1773

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

10/023,493

Applicant(s)

TOM ET AL.

Examin r

Christopher G. Paulraj

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 17-23 and 33 is/are rejected.
- 7) ☒ Claim(s) 14, 16, 24-32 and 34 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8, 15, 17, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Cabrera et al. (WO 98/58253). WO 98/58253 is written in the German language. U.S. Patent 6,398,962, which is the U.S. national filing of the same document, has been used as the English translation. Column and line numbers refer to the U.S. Patent.

Cabrera et al. discloses a monolithic sorbent made of SiO<sub>2</sub> (silica) bodies that have macropores (considered equivalent to the claimed interior channels) with an average diameter in the range from 2 to 20 µm and micropores that have an average diameter in the range of 2 to 100 nm (20 to 1000 Å) (see col. 2, lines 19-25). When the largest possible macropore diameter is taken in conjunction with the smallest possible micropore diameter, the difference can be four orders of magnitude (10000x). The macropores are considered to be cylindrical bores through said sorbent material and an array of the claimed interior channels.

3. Claims 1-12, 15, 17, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Maroldo et al. (U.S. Patent 5,104,530).

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Maroldo et al. discloses carbonaceous adsorbent particles that have multimodal pore size, including macropores and micropores (see abstract). The macropores (considered to be cylindrical bores and equivalent to the claimed interior channels) can have an average diameter of up to 10000nm and the micropores can have an average diameter of at least 0.10 nm, with a resulting difference of greater than four orders of magnitude (see col. 4, lines 43-51). The adsorbent particles can comprise bead activated carbon material (see col. 4, lines 52-59) and can have a particle diameter of 0.85 to 2.5 mm (see col. 6, lines 44-45).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom et al. (U.S. Patent 5,704,965) in view of Maroldo et al.

Tom et al. discloses a fluid storage and delivery system using carbon sorbent medium (see abstract). The adsorption-desorption apparatus disclosed meets the instant claim requirements with the exception that there is no teaching to use sorbents having an interior channel with a diameter of at least one order of magnitude higher than the average pore diameter (see claim 6). Tom et al. discloses that a preferred sorbent material is a bead carbon form of an activated carbon, where the beads have

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an average diameter in the range of 0.1 to about 1 cm (see col. 12, lines 22-30). One skilled in the art would have found it obvious to use the activated carbon beads having macropores and micropores disclosed by Maroldo et al. in the apparatus disclosed by Tom et al. The motivation for doing so would have been to optimize the adsorption of gases with the increase in surface area.

***Allowable Subject Matter***

6. Claims 14, 16, 24-32, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not reasonably teach or suggest sorbent materials comprising carbon molecular sieves having a cylindrical extruded shape or which comprise a single cylindrical through-bore channel. The prior art also does not reasonably teach or suggest that the sorbent materials can be formed by coating a sorbent precursor material around removable solid core bodies and then removing the solid core bodies.

***Information Disclosure Statement***

7. Receipt of Information Disclosure Statement filed on April 1, 2002 is acknowledged and has been made of record. Foreign language documents were only considered to the extent of what their English abstracts provided.

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**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher G. Paulraj whose telephone number is (703) 308-1036. The examiner can normally be reached on Monday-Friday, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0661.



cgp  
March 4, 2003



Paul Thibodeau  
Supervisory Patent Examiner  
Technology Center 1700